

Remarks

Entry of the amendments and allowance of the pending claims are respectfully requested. Claims 1-25 remain pending.

By this amendment, claims 1-4, 7, 11, 14, 18 & 21 are amended to more particularly point out and distinctly claim certain aspects of Applicants' invention. These amendments to the claims constitute a *bona fide* attempt by the Applicants to advance prosecution of this application and obtain allowance of certain claims and are in no way meant to acquiesce to the substance of the rejections. It is believed that the amendments to the claims place all claims in condition for allowance.

No new matter is added to the application by any amendment presented. Support for the amended independent claims can be found throughout the application as filed, for example, reference page 35, lines 11-16.

In the Office Action, claims 1-6, 11-13 and 18-20 were rejected under 35 U.S.C. §102(b) as being anticipated by Torbjørnsen et al. (U.S. Patent No. 5,555,404; hereinafter Torbjørnsen), while claims 7-10, 14-17 and 21-24 were rejected under 35 U.S.C. §103(a) as being unpatentable over Torbjørnsen in view of Badovintz et al. (U.S. Patent No. 5,805,786; hereinafter Badovintz), and claim 25 was rejected under 35 U.S.C. §103(a) as being unpatentable over Torbjørnsen, in view of Duprey et al. (U.S. Patent No. 6,671,705; hereinafter Duprey). Each of these rejections is respectfully traversed to any extent deemed applicable to the claims presented herewith, and reconsideration thereof is requested.

As recited in amended claim 1, for example, Applicants' invention comprises a technique for recovering from failures within a shared nothing distributed computing environment. The technique includes detecting multiple overlapping failures within the shared nothing distributed computing environment, and automatically recovering from the multiple overlapping failures. Thus, Applicants' technique is a multiple fault tolerant approach for a shared nothing distributed computing environment. Further, Applicants' approach specifies automatic recovery from the

failures wherein one or more transactions affected by the failures are automatically executed to completion without rolling back the transactions and without requiring a reposting of the transactions. Applicants respectfully submit that a careful reading of the prior art fails to uncover any teaching, suggestion or implication of these concepts within the context of a multiple fault tolerant approach for a shared nothing distributed computing environment.

With respect to the anticipation rejection, it is well settled that a claimed invention is not anticipated unless a single prior art reference discloses: (1) all the same elements of the claimed invention; (2) found in the same situation as the claimed invention; (3) united in the same way as the claimed invention; and (4) in order to perform the identical function of the claimed invention. In this instance, Torbjørnsen fails to disclose at least one element of Applicants' invention as recited in the amended independent claims.

A careful reading of Torbjørnsen fails to uncover any discussion of a failure recovery approach that is applicable to multiple overlapping failures. Torbjørnsen expressly teach otherwise at Column 5, lines 47-55, where it is stated that the corrective online repair approach disclosed therein is single fault tolerant. As noted, if a second fault were to occur while the repair of the first fault is taking place, the system is vulnerable to failure. This is in contrast to Applicants' invention which is directed to a high reliability system wherein multiple overlapping failures may occur, be detected and automatically recovered from in such a way that one or more transactions affected by the failures are automatically executed to completion without rolling back the transactions and without requiring reposting of the transactions. For this reason, Applicants respectfully request withdrawal of the anticipation rejection to the claims presented.

Additionally, Applicants respectfully submit that the amended claims would not have been obvious to one of ordinary skill in the art based upon the art of record. There is no suggestion or implication how one of ordinary skill in the art would modify the Torbjørnsen system to make the approach described therein a multiple fault tolerant approach. Torbjørnsen expressly teaches that the mirroring approach described therein is a single fault tolerant approach meaning that only a single fault at a time can be addressed. This is contrasted with Applicants' invention wherein multiple overlapping failures within the shared nothing distributed computing


environment can be detected and recovered from. Neither Badovinatz nor Duprey is cited in the Office Action for this aspect of Applicants' invention, and neither is believed applicable thereto.

Badovinatz is cited in the Office Action for teaching recovery in a distributed computing environment, wherein the recovery includes electing a coordinator from among at least one surviving member, while Duprey is cited for a remote mirroring system, which includes a failure recovery technique for a distributed synchronous transaction system. Without acquiescing to the characterization of the teachings of these two patents, Applicants respectfully submit that neither patent addresses an approach for detecting multiple overlapping failures and automatically recovering from the multiple overlapping failures within a shared nothing distributed computing environment, let alone automatically recovering from those failures so that transactions affected by the failures are automatically executed to completion without rolling back the one or more transactions and without requiring a reposting of the one or more transaction. The protocol necessary to achieve this automatic failure recovery in the presence of multiple overlapping failures would not have been obvious to one of ordinary skill in the art based upon the art of record.

For the above reasons, Applicants respectfully submit that the independent claims presented are patentable over the applied art. The dependent claims are allowable for the same reasons as the independent claims, as well as for their own additional characterizations.

The application is believed to be in condition for allowance, and such action is respectfully requested. Applicants' undersigned attorney is available should any remaining issue require resolution.

Respectfully submitted,


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